Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Part 97 of the Commission's	)	**RM-_____**
Amateur Service Rules Governing	)	
Operating Privileges	)	

To: The Commission

PETITION FOR RULE MAKING

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SUMMARY

ARRL, the National Association for Amateur Radio, also known as the American Radio Relay League, Incorporated (ARRL), requests that the Commission issue a Notice of Proposed Rule Making at an early date looking toward amendment of the rules governing the Amateur Radio Service, 47 C.F.R. §97.1 et seq., as set forth herein and in the attached Appendix. The rule changes proposed herein will improve the efficiency of Amateur use of existing allocations through service rules that permit more flexibility in Amateur Radio operation generally.

It is urgent that the Commission consider revisions to operating privileges in the Amateur Service. The petition proposes to eliminate the Novice and Technician-Plus telegraphy subbands, and would reapportion those inefficiently deployed segments, thus to allow alleviation of significant, sometimes critical overcrowding in the popular Amateur HF allocations. The elimination of the subbands, and the expansion of the segments in which residual Novice and Technician Plus class licensees can operate telegraphy to include all narrowband segments of the 80, 40, and 15 Meter bands, and expansion of the telephony and telegraphy/data subbands will benefit all licensees. While there are various specific configuration options for the refarmed bands, ARRL's survey supports the proposal contained herein. The desire for more telephony spectrum in those bands should be carefully balanced against the important goal of encouraging further development of narrowband data communications in the telegraphy segments of those bands. ARRL believes that the configuration proposed herein reaches the right balance.

ARRL also requests minor rule changes proposed herein, relating to SS emissions at 222-225 MHz; clarification of certain emission designator rules; enhancement of the Special Event Call Sign program; and clarification of operating restrictions in Colorado and Wyoming. Each of the changes proposed herein should be consolidated in a "biennial review" type proceeding involving this Petition and other pending rulemaking petitions as the Commission might see fit.

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ARRL, the National Association for Amateur Radio, also known as the American Radio Relay League, Incorporated (ARRL), by counsel and pursuant to Section 1.405 of the Commission's procedural rules (47 C.F.R. §1.405), hereby respectfully requests that the Commission issue a Notice of Proposed Rule Making at an early date looking toward amendment of the rules governing the Amateur Radio Service, 47 C.F.R. §97.1 et seq., as set forth herein and in the attached Appendix. The rule changes proposed herein will improve the efficiency of Amateur use of existing allocations through service rules that permit more flexibility in Amateur Radio operation generally. In support of its petition, ARRL states as follows:

I. Introduction and Background

1. On December 30, 1999, the Commission released its *Report and Order*, FCC 99-412, 15 FCC Rcd. 315, in WT Docket 98-143, the 1998 Biennial Review proceeding governing the Amateur Service (referred to herein as the "restructuring proceeding"). That proceeding examined the Amateur Service licensing structure, substantially simplified it, and implemented profound changes in the Rules governing licensing

requirements and license classes. Among those changes was the reduction in the number of classes of Amateur license from six to three (not by the reclassification of existing licensees, but by cessation of issuance of future licenses of the deleted classes and retaining licensees holding the deleted class licenses in their then-current posture). The deleted license classes were the Novice, Technician-Plus, and the Advanced Class. No new Novice, Technician-Plus, or Advanced class licenses were issued after April 15, 2000.

2. While ARRL supported the concept of restructuring of license classes at the time, and the reduction in the number of license classes overall, there was substantial disagreement among those who commented in the proceeding (as might be expected in a proceeding of that nature), as to the details of the revised licensing structure. ARRL supported the Commission's proposal to eliminate the Novice license class, inasmuch as it was no longer a significant avenue for newcomers to the Amateur Service. Instead, most newcomers to Amateur Radio at the time entered the ranks as Technician or Technician-Plus licensees. Where the Commission and ARRL significantly differed in the license restructuring proceeding was with respect to the treatment of incumbent Novice and Technician-Plus licensees. ARRL urged that the Commission not restructure the license classes without, at the same time, revisiting operating privileges for all classes of licensee.

3. ARRL was concerned especially with the segments of the high-frequency (HF) Amateur allocations set aside for Novice class and Technician-Plus class licensees for telegraphy using relatively low power. These segments, though available also for low-power use by Amateurs holding higher class licenses, were not then, and are not now,

heavily used. The elimination of licensing of new Novice and Technician-Plus class Amateurs, without "refarming" of the subbands on which they operate in the HF range would, ARRL argued, only make that inefficiency worse. While those relatively small segments were underused (because they were considered to be set aside for newcomers), other segments of the Amateur HF allocations remained severely overcrowded, and are so today. ARRL proposed in the license restructuring proceeding, among other things, (1) a one-time upgrade of existing Novice and Technician-Plus licensees to General Class; and (2) a "refarming" of the Novice telegraphy allocations at 3,675-3,725 kHz, 7,100-7,150 kHz, and 21,100-21,200 kHz, and 28,100-28,300 kHz, so as to make more efficient use of those segments, and the HF bands generally.

4. The Commission chose not to proceed in this manner, however. It chose instead to address license restructuring first, and to postpone consideration of revised operating privileges until a later date when some experience with the new license classes was obtained. The Commission was also reluctant to upgrade the license classes of any incumbent licensees, out of concern for protecting the "incentive" licensing structure which encourages continued technical self-training. The Commission stated:

> We disagree with the ARRL, however, that simplification of the license structure only should be undertaken as part of a comprehensive restructure of the licensing process and operating privileges. We believe that in light of ongoing discussions concerning implementation of new and more modern communications technologies within the amateur service community, we should accord the amateur service community an opportunity to complete such discussions and possibly reach a consensus regarding implementation of new technologies before we undertake a comprehensive restructuring of the amateur service operating privileges and frequencies. For example, the ARRL recently announced it has a newly-formed committee that will study the implementation of modern technologies into the amateur service...
>
> *Report and Order*, 15 FCC Rcd. at 325 (footnotes omitted).

Further, on the same point:

> When the Novice Class operator license was established in 1951, limited frequency segments in the HF portion of the radio spectrum were established for Novice Class operators so that they could improve their telegraphy skills by practicing telegraphy on-the-air. This on-the-air use of telegraphy was necessary, in part, because the Novice Class operator license was a one-year, once-in-a-lifetime, non-renewable license. At the end of the year, the licensee was required either to upgrade his or her license or discontinue operations. Specific frequency segments for Novice Class operators have been a part of the amateur service license structure since 1951. These frequency segments are available to other class licensees but, with the exception of the 10-meter frequency segment, only at reduced power. In the *Notice*, we requested comment on whether it would be appropriate to delete the frequency limitations on Novice Class operators and the power limitations on other classes of operators using the Novice frequencies if we were to discontinue licensing new Novice Class operators.
>
> ...We have considered the comments on this issue and have decided that because we are grandfathering Novice Class operator licenses, rather than automatically upgrading them to General Class operator license as requested by the ARRL, we will not adopt any rule changes at this time that would change operating privileges for any licensee within the frequency segments currently authorized Novice Class operators. We also note that the comments are divided as to what the future use of these frequency segments should be...
>
> *****
>
> ...As for the suggestion of others that we eliminate the Novice bands, we will not adopt this suggestion because the remaining comments convince us that there is no consensus within the amateur service community regarding rule changes we should make concerning these frequency segments. We also note that reallocation of these frequency segments could have an effect on implementation of modern technologies into the amateur service and that we have previously decided that we should accord the amateur service community an opportunity to complete such discussions and possibly reach a consensus regarding implementation of new technologies before a comprehensive restructuring of the amateur service operating privileges and frequencies is undertaken.
>
> *Report and Order*, 15 FCC Rcd. at 346 (footnotes omitted).

5. It has now been approximately two years since the *Report and Order* was implemented. The most pronounced effect on Amateur operating patterns since then is

that, as ARRL had noted, the "Novice subbands" of the HF bands remain underutilized. There remain significant numbers of Novice and Technician-Plus licensees who are entitled to operate in those segments. They must not be disaccommodated in any refarming plan. However, substantial advancements in the use of digital techniques in the HF bands, (such as the extremely popular PSK-31), and overcrowding generally (especially in the segments used for SSB telephony), firmly dictate that a refarming plan for the underutilized Novice HF subbands cannot wait longer and must proceed now.[1]

6. An HF band "refarming" plan is not the only component of this petition. It has been more than two years since the license restructuring proceeding, which was in the nature of a biennial review for the Part 97 rules. ARRL suggests that the Wireless Bureau's and the Commission's resources are best conserved and administered by periodic consideration of related Part 97 issues in one proceeding, rather than in a series of proceedings, where each issue does not necessitate separate consideration. Consistent with this philosophy, ARRL has included in this petition other rule change proposals concerning operating privileges in the Amateur Service. Further, ARRL proposes that this Petition be consolidated with other petitions presently pending which address operating privileges in the Amateur Service,[2] and that the Commission address these together in a biennial review-type proceeding. This is not, by any means, to minimize the importance of any individual pending issue before the Wireless Bureau relating to Part 97. In fact, ARRL views this "refarming" proceeding as urgent and critical. It would

[1] The web site at www.ah0a.org sets forth some statistics on license data, which indicate that since July of 1999, the number of General class Amateurs has increased from 110,780 to 138,688, an increase of approximately 20 percent. The number of General, Advanced and Extra Class Licensees has increased during the same period from 289,669 to 323,704, an increase of 12 percent.

[2] These might include, for example, RM-10313; RM-10352; RM-10353, RM-10354, and RM-10355, filed by various groups and individuals.

seem reasonable and efficient, however, to address Part 97 changes in a consolidated, "biennial review" fashion.

II. The ARRL Novice Spectrum Study Survey

7. Anticipating the inevitable review of Amateur operating privileges that followed from the restructuring proceeding, and heeding the Commission's admonition in the restructuring proceeding that any such effort should ideally represent some consensus, ARRL's Board of Directors (itself a representative entity) in January of 2001 ordered the appointment of a committee of five of its members to solicit membership input and updating of ARRL's position on refarming of the Novice HF subbands. The Committee was formed, and determined how best to obtain input from both ARRL members and non-member Amateurs on the subject[3]. The Committee developed a survey, to be placed on the ARRL members-only web site (www.ARRL.org), thus providing an opportunity for ARRL members to review the proposals of the Committee. An opportunity to make additional comments was provided on the web site, to encourage creative ideas on the subject. An E-mail address for comments was created for use by members and non-members of ARRL to use for comments. The survey was also printed in *QST*, the ARRL's official journal, with a tear-out, mail-in survey sheet so that input could be gathered from the widest possible audience of amateurs, including those without

[3] The Committee noted the Commission's propensity in recent Amateur proceedings to stress input from all segments of the Amateur community, and as the result made a special effort to obtain the input of non-ARRL members as well as ARRL members. ARRL would note that its membership represents the majority of active radio Amateurs and its proceedings are conducted on a representative basis. Nevertheless, to the extent that the Commission's obligation is to consider the widest possible sources of input in notice and comment rulemaking proceedings, this survey was carefully structured to take into account the views of all radio Amateurs who were interested in the issue and who cared to comment. The survey was open to all Amateurs, and the responses were tabulated regardless of ARRL member status. The effort was obviously successful, given the number of responses. ARRL suggests that its survey results in this case represent a better picture of the views of interested radio amateurs than does a typical response to Commission notice and comment proceedings.

computer access, again regardless of ARRL membership status. Furthermore, news stories about the survey, with instructions about how to participate, were widely disseminated and resulted in significant non-ARRL member input.

8. While the survey results did not reflect consensus on any one HF band configuration, consensus was not anticipated by the Committee. The survey listed some alternative configurations for narrowband and wideband segments in the 80-meter, 40-meter, 15-meter and 10-meter HF allocations. It would have been impractical to attempt an exhaustive list of all possible permutations or adjustments in the HF bands. Had that been attempted, the results of the survey would have been diluted to an unacceptable extent. The Committee's proposals instead sought to determine tendencies and trends among those responding rather than to seek input on the many possible options for separating wideband and narrowband emissions in each band.

9. The survey asked some questions about the respondent, and his or her own HF operating preferences (if any), and then asked for input on four alternative band configurations for each of the 80-, 40-, 15- and 10-meter bands, where there are presently Novice and Technician-Plus subbands. For each band, one option was "no change" and another option was "other", so that a unique configuration might be proposed by the respondent. A copy of the printed survey, which reveals each proposed option, is attached hereto as **Exhibit A**. There were some presuppositions in the survey. The first of these, noted in the survey itself, was that there will continue to be Novice and Technician Plus licensees for the foreseeable future. Therefore, because ARRL's position is that operating privileges should not be decreased for any licensee in any regulatory reform, future options must include spectrum for telegraphy for Novice and Technician-Plus licensees,

in addition to the telephony and digital privileges already available to them in the 10-meter band. Further, in the 80-, 40-, and 15-meter bands, Novice and Technician-Plus telegraphy restrictions should be changed to match those of General Class telegraphy/RTTY/Data band segments, but with the caveat that Novice and Technician Plus licensees may only use telegraphy with a maximum power of 200 watts in those band segments.[4]

10. The results of the survey were impressive. ARRL received 4,744 responses. Of those, a significant majority (2,889 respondents, or 60.9%) were Extra Class licensees. A copy of the survey results tabulation is attached hereto as **Exhibit B**. There are some general conclusions to be drawn from the survey. It was apparent, for example, that most respondents approved of the idea of dissolving the Novice/Technician Plus telegraphy subbands, and to allow Novice and Technician Plus licensees to operate telegraphy in any portion of the bands that provide for telegraphy (but not telephony) operation by General class licensees. This applies to the 80-, 40-, 15-, and 10-meter bands. Because this constitutes a significant expansion of the spectrum to which Novices and Technician Plus licensees historically have had access, and because they would be interacting in all portions thereof with higher class licensees, it is reasonable to presume that the support of respondents for this accommodation is premised in part on retaining the 200-watt power limitation for HF telegraphy operation by Novice and Technician Plus licensees. General, Advanced and Extra Class licensees would be subjected to normal power output limitations in all segments, without limitation to the 200 watts PEP output now specified for the current Novice and Technician-Plus segments.

[4] In the 10-meter band, telegraphy, RTTY and Data modes are already permitted for Novice and Technician Plus licensees.

11. Many respondents suggested that if the Novice and Technician Plus telegraphy subbands are refarmed, some consideration should be given to designation of a portion of the HF telegraphy subbands for slower telegraphy operation. ARRL is of the view that this is a matter best addressed by private sector band planning, and therefore no regulation addressing this issue is proposed herein.

12. There was substantial support in the survey results for a refarming plan which would result in substantial expansion of the telephony subbands. This is interesting given the inordinately large number of respondents who were Extra Class licensees, who have little to gain personally by the proposal. ARRL is of the view that Extra Class amateur licensees are, in general, more active in HF communications on a regular basis than licensees holding other license classes, and that explains the high degree of participation in the survey from Extra Class licensees. Yet, telephony subband expansion would appear to benefit other classes of licensee to a greater extent than it would benefit Extra Class licensees. It is suggested that this sentiment reflects the significant overcrowding that exists in the HF telephony subbands currently.

III. The Survey Results

13. As can be seen from **Exhibit B**, the survey results by band show that most respondents (71.1 percent) prefer a restructuring of the 80-meter band such that the telephony (wideband) segment, which now includes the segment 3.75-4.00 MHz, be expanded to either 3.700 or 3.725 MHz, and that there be retained a 25 kHz segment for Amateur Extra class licensees. ARRL proposes that of the two most popular configurations, the more cautious approach should be taken, and that the band be reconfigured as follows:

80 meters phone, image, cw:

General Class	**3800 to 4000 kHz**
Advanced Class	**3750 to 4000 kHz**
Extra Class	**3725 to 4000 kHz**

This would appear to take into account the extensive support for retaining a 25 kHz wideband segment for Extra Class licensees only, and at the same time substantially expand the crowded telephony subband. However, it would also, importantly, preserve a substantial segment of the band for narrowband digital technologies and to accommodate the increase in telegraphy from the addition of the Novice and Technician-Plus licensees to the larger narrowband segment.

14. At 40 meters, any changes involve significant compromise due to the substantial interference in the upper portion of the band from HF broadcast stations, and overcrowding in the lower segment due to the severely limited allocation in ITU Regions 1 and 3. Yet, some small improvement can be obtained by the refarming of the Novice and Technician-Plus subband at 7.100-7.150 MHz. The survey results strongly (48.5 percent) supported a configuration which extended the telephony (wideband) segment to include 7.125-7.300 MHz for both Extra and Advanced-class licensees, and 7.175-7.300 kHz for General Class licensees. A substantial minority (24 percent), however, supported a configuration which extended the telephony subband to 7.150-7.300 kHz for Advanced and Extra Class licensees, and 7.200-7.300 MHz for General Class licensees. Given (1) the severity of the interference from HF broadcasting stations to amateur telephony in the upper portions of this band, and (2) the substantial preference (approximately two to one) in favor of greater telephony band expansion, ARRL proposes the following configuration :

40 Meters phone, image, cw:

General Class	**7175-7300 kHz**
Advanced/Extra Class	**7125-7300 kHz**

15. At 15 meters, a substantial minority (48.7 percent) of the survey respondents stated a preference for a configuration which extended the telephony (wideband) subband downward to 21.175 MHz for Extra Class licensees, 21.200 MHz for Advanced class licensees, and 21.250 MHz for General Class licensees. The current lower limits for telephony in that band are 21.200 MHz for Extra Class, 21.225 MHz for Advanced, and 21.300 MHz for General Class licensees. However, in this band, the current telephony subband is somewhat larger than in other bands, and there are substantial and increasing numbers of Amateur stations using digital techniques in the narrowband segment. ARRL therefore proposes no overall expansion of the telephony subband in this band, and a smaller expansion for Advanced and Extra Class licensees than what the survey might support, in order to protect and encourage developing and expanding narrowband digital techniques in this band. ARRL here proposes a configuration that was supported by 23.1 percent of the respondents overall. It includes 25 kHz of additional telephony spectrum for General class licensees, and expanded telegraphy spectrum for Novice and Technician Plus Class licensees. Accordingly, at 15 meters, ARRL proposes the following configuration, though the survey would support an even greater expansion of the telephony subband than what is included here, at the expense of narrowband digital modes:

15 meters phone, image, cw:

General Class	**21.275 to 21.450 MHz**

Advanced Class	**21.225 to 21.450 MHz**
Extra Class	**21.200 to 21.450 MHz**

16. Finally, at 10 meters, the majority of the respondents (54.5 percent) proposed no change to the telephony (wideband) segment at all. The subbands in this band already substantially accommodate Novice and Technician-Plus licensees. They are presently permitted to operate telegraphy, RTTY and data at 28.100-28.300 MHz, and they are permitted to utilize 200 kHz of the telephony segment (28.300-28.500 MHz). While there is, from time to time, substantial overcrowding of the telephony segment in this band, especially in the past few years at the peak of the current sunspot cycle, at other times there is sufficient telephony spectrum to accommodate users, and there is also adequate spectrum for digital communications in the narrowband segment. Therefore, no change, other than to accommodate telegraphy, RTTY and data by Novice and Technician-Plus licensees in the entire 28.0-28.3 MHz segment, is proposed for this band.

IV. Summary of Refarming Proposal

17. In essence, ARRL, with the support of almost 5,000 survey respondents, proposes to substantially expand the telephony, or wideband, segments of three of the HF Amateur allocations, though not in every case as extensively as the survey results would support. ARRL believes that conversion to digital communications technologies in the Amateur Service is a critically important component of the future of Amateur HF communications. This conversion will be necessary in order to accommodate growth in the service and extension of Amateur leadership in the development and refinement of digital communications technology. While wideband telephony remains the most popular operating mode in the HF bands, and that preference is reflected in the survey results, there is a somewhat offsetting issue of importance in these regulatory changes, which is

to preserve portions of the narrowband segments for narrowband data communications. ARRL is convinced that its survey results are valid and substantially support the proposed changes discussed herein and as proposed in the attached Appendix. It is necessary, however, to proceed somewhat cautiously so as to protect the minority of respondents concerned about adequate accommodation for narrowband data communications.

18. There is a great deal of support in the survey for the ARRL proposal to eliminate the telegraphy subbands for Novice and Technician Plus licensees in the HF bands. Novice and Technician Plus licensees should be allowed to operate telegraphy in the 80, 40, and 15-meter bands in all non-telephony segments in which General Class licensees can utilize telegraphy. In addition, Novice and Technician-Plus licensees should continue to be permitted to utilize telegraphy, RTTY and data in the 10 meter band between 28.0 and 28.3 MHz, and SSB between 28.3 and 28.5 MHz. All Novice and Technician operating power should, as now, be limited to 200 watts PEP output in the 80, 40, 15 and 10 meter bands.

V. Spread Spectrum Communications At 222-225 MHz

19. In a *Report and Order*, FCC 99-234, 17 CR 130, released September 3, 1999, the Commission amended the Part 97 rules to permit Amateur stations to transmit different types of Spread Spectrum (SS) emissions. Specifically, it removed the rule limiting SS emissions to direct-sequence and frequency-hopping spreading techniques; it adopted an automatic transmitter power control requirement; and it removed unnecessary record keeping and station identification regulations. The Commission, in so doing, sought to provide a flexible regulatory framework that allows for continued development

of new services through experimentation by Amateur operators on Amateur Service spectrum; to promote technological innovation; and to eliminate unnecessary regulatory burdens.

20. This proceeding, now well more than two years old, has done a good job toward promoting SS experimentation in the Amateur Service, and ARRL is grateful for the Commission's policy goals in this area. Amateur radio is a good forum for SS experimentation, and amateurs continue to refine this technology and develop new applications for it. ARRL would now, after some substantial experience with this technology over a period of many years, suggest one further rule change in order to promote the use of SS communications in the Amateur Service. At present, Section 97.305(c) of the Rules prohibits SS emissions below 420 MHz (the lower limit of the 70 cm band). ARRL would propose to allow SS at 222-225 MHz as well. There is now no VHF band in which SS emissions can be utilized. In the three megahertz of bandwidth at 222-225 MHz, recognizing that this band is substantially occupied in most areas with Amateur stations using narrowband emissions, there are nevertheless significant opportunities for re-use of the spectrum for SS communications and experimentation.

21. Amateur stations using SS in the 222-225 MHz band for SS communications would be subject to each of the restrictions applicable to SS in other Amateur allocations, set forth at Section 97.311 of the rules. In particular, Section 97.311(b) makes all SS operation secondary to other types of Amateur communications. It provides that "(a) station transmitting SS emissions must not cause harmful interference to stations employing other authorized emissions, and must accept all interference caused by stations employing other authorized emissions." There are other provisions in that section which

are sufficient to preclude interference to other Amateur communications in the 222-225 MHz band. It is therefore requested, in the same spirit, and on the same policy bases enunciated by the Commission in the 1999 *Report and Order* deregulating SS communications cited above, that this expansion of the bands on which SS emissions are permitted be included in the Notice of Proposed Rule Making sought by this Petition.

VI. Clarification of Emission Designators

22. There is one minor clarification that is more editorial than substantive within the Amateur rules that could be conveniently corrected in this proceeding. This change would remedy an apparent conflict between Section 97.3(c)(5), which defines "phone" emissions, and Section 97.119(b)(1), which addresses identification of repeaters. In correspondence some time ago with members of the Question Pool Committee of the NCVEC, ARRL was asked where the Rules permit MCW emission for identification of repeaters. Section 97.3(c)(5) of the Rules states in part that "MCW for the purpose of performing the station identification procedure, or for providing telegraph practice interspersed with speech" is permitted. This section alone is sufficient to permit MCW identification of voice repeaters and would be satisfactory to Amateurs, but for an inconsistency between this provision and Section 97.119(b). That Section states that a call sign must be transmitted with an emission authorized for the transmitting channel in one of the following ways: "(1) By a CW emission. When keyed by an automatic device used only for identification, the speed must not exceed 20 words per minute." By omission of any reference to MCW, the specific repeater station identification rule would, on its face, permit CW, but not MCW, for the purpose. This could be clarified by

changing the language of the latter section to read "(1) By a CW or MCW emission...etc." The change (or clarification) is proposed herein.

VII. Special Event Call Signs

23. In 1997, the Commission initiated a program of temporary, assigned Special Event call signs for use by Amateur stations participating in the commemoration of a special event. This program, initated pursuant to a *Report and Order*, 12 FCC Rcd. 3804 (1997), has proven popular in the Amateur Service. Administered by volunteers, there is no cost to the Commission in administering the program, and no cost to the radio Amateurs whose temporary participation in important events is commemorated thereby. The special event call signs, pursuant to Section 97.3(a)(11)(iii) of the Commission's rules, are composed of a single letter prefix K, N or W, followed by a single numeral through 9, followed by a single letter A through W or Y through Z (for example, K1A). These call sign formats are commonly referred to as "1 X 1" call signs. There are 750 permutations of call signs possible in this format. The special event call sign is substituted for the call sign shown on the station license while the station is transmitting. The procedures are specified in Commission public notices from time to time, though the system is administered entirely by appointed volunteer groups. ARRL is one such special event call sign administrator.

24. On May 18, 1998, ARRL filed a Petition for Rule Making seeking amendment of the rules to expand the pool of Amateur station special event call signs. It asked that additional blocks of call signs be made available besides the 1 X 1 format, specifically to designate United States Territories and Possessions often visited by radio Amateurs for avocational interest or in support of a scientific expedition, or for radiosporting purposes,

but which are uninhabited, or in any event do not have a mailing address. Examples of these territories include Kingman Reef, Baker and Howland Islands, Palmyra, Navassa, Desecheo, and others. Each of these has an established call sign prefix, but no such call signs can be assigned to any licensee, either through the Vanity Call Sign program or sequentially, because there is no mailing address at which a licensee can receive mail at any of those locations.[5] Therefore, the call sign blocks invariably lie fallow. Because Amateur operation from these locations is clearly a "special event" within the meaning of the special event call sign program, and because the call sign blocks can be easily administered at no cost to the Commission or the licensee seeking a temporary call sign, the expansion of the system beyond merely the administration of 1 X 1 call sign blocks seems easy to justify. They do not detract from the blocks that are assigned or assignable to any radio amateur on a permanent basis, so no one is deprived of a call sign they might like to have assigned to them. Further, should those areas without mailing addresses develop such at a later time, the blocks could easily be deleted from special event call sign availability by the Commission at a later date by public notice, or by notice to the appointed Special Event Call Sign Administrators. Finally, the use of a 1 X 1 special event call sign from one of these United States territories or possessions does not denote the location of the station, and does not adequately serve the function of denoting the location of certain types of special event, as it might if the Amateur station was located in the continental United States.

25. By letter dated April 21, 1999 (2000F/MJD), the Chief, Public Safety and Private Wireless Division, WTB, denied the petition without placing it on public notice.

[5] Section 97.19(d)(4) specifies that "A call sign designated under the sequential call sign system for Alaska, Hawaii, Caribbean Insular Areas, and Pacific Insular Areas will be assigned only to a primary or club

The denial was based on the lack of experience with the Special Event Call Sign program at that point; the lack of demand then for the 1 X 1 call signs at the time; the rapid reassignment of the special event call signs, and the "complexity" of the addition of call sign blocks. It concluded that the more "prudent" course was to assess modifications to the system after greater experience is obtained with the functioning of the system "beyond the present nascent stages of its existence." The letter encouraged ARRL to monitor the situation and to advise the Bureau of changes in factual circumstances.

26. While ARRL understands the Commission's reluctance to make changes in the program at the time, the Petition set forth good and sufficient reasons for adding at least the 2 X 1 call sign blocks corresponding to the prefixes assigned specifically to those territories which have no mailing addresses and which cannot support permanent call sign assignments for that reason. Those blocks are lying fallow at the moment, just as they were in 1998 when ARRL filed its first petition. The system is working well administratively, with more volunteer assistance in administering it than is necessary. Finally, the demand for this additional format of special event call signs has increased with time. ARRL therefore again urges that the Commission modify Section 97.3(a)(11) of the Rules to add to the Special Event Call Sign definition certain 2 X 1 call sign blocks corresponding to the United States prefixes which designate territories and possessions which have no specified mailing addresses, as set forth in the attached Appendix.

VIII. 33 cm Band Quiet Zone in Colorado and Wyoming

27. Section 97.303(g)(1) sets forth a limitation on Amateur operation in the 33 cm band (902-928 MHz) in certain areas of Colorado and Wyoming, within the boundaries delineated by latitude and longitude specified in the rule section. However, in 1990, by

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station whose licensee's mailing address is in the corresponding state, commonwealth, or island..."

waiver granted by the Commission, Amateurs in that restricted area were authorized to transmit in the segments 902.0-902.4 MHz; 902.6-904.3 MHz; 904.7-925.3 MHz; 925.7-927.3 MHz, and 927.7-928 MHz. Though this band is allocated to the Amateur Service on a secondary basis, and the rule section (as well as the Table of Allocations, Section 2.106 of the Commission's Rules) so specifies, the waiver grant should be incorporated in the rules, so as to make the operating limitations clear to all. The waiver grant was applicable to all radio Amateurs, and the benefits of it should be publicized as widely as possible. ARRL views this as a relief of restrictions and a clarification that should be done editorially.

IX. Conclusions

28. ARRL suggests that it is urgent that the Commission consider revisions to operating privileges in the Amateur Service. The opportunity to eliminate the Novice and Technician-Plus telegraphy subbands, and the reapportionment of those inefficiently deployed segments will allow alleviation of significant, sometimes critical overcrowding in the popular Amateur HF allocations. The elimination of the subbands, and the expansion of the segments in which residual Novice and Technician Plus class licensees can operate telegraphy to include all narrowband segments of the 80, 40, and 15 Meter bands, and expansion of the telephony and telegraphy/data subbands will benefit all licensees. While there are various specific configuration options for the refarmed bands, ARRL's survey supports the proposal contained herein, and in fact could support even greater expansion of the telephony subbands than is proposed herein with respect to the 80 and 15-meter segments. However, ARRL believes that the desire for more telephony spectrum in those bands should be carefully balanced against the important goal of

encouraging further development of narrowband data communications in the telegraphy segments of those bands. ARRL believes that the configuration proposed herein reaches the right balance.

29. ARRL also requests that the minor rule changes proposed herein, relating to SS emissions at 222-225 MHz; clarification of certain emission designator rules; enhancement of the Special Event Call Sign program; and clarification of operating restrictions in Colorado and Wyoming, should be proposed, and that each of the changes proposed herein should be consolidated in a "biennial review" type proceeding involving this Petition and other pending rulemaking petitions as the Commission might see fit. Such a means of addressing Part 97 rule changes seems to ARRL to be efficient from the perspective of the Commission's resources, and provides a reasonably convenient timetable for evaluating the necessity of future Part 97 modifications. In closing, ARRL appreciates the responsiveness of the Commission's Public Safety and Private Wireless Division in addressing service rule changes and other needs of, and matters of interest to the Amateur Service. At the present time, when the security of the American Homeland has been subject to threats, the Commission has found, and will continue to find at the disposal of the American people the volunteer services of the approximately 650,000 licensed radio amateurs, who are self-trained and organized emergency communications experts and technicians. The ubiquitous communications systems installed and maintained by radio Amateurs are always functional, and Amateur operators consistently and reliably volunteer in emergencies and disaster relief. ARRL would like the Commission to know that the Amateur Service is ready, willing and able to assist as necessary in its normal capacity. However, the Amateur Service maintains this capability

only by virtue of responsive stewardship of the Public Safety and Private Wireless Division specifically, and the Commission generally. ARRL urges the Commission to attend to the needs of the Amateur Service in maintaining its reliable infrastructure. These needs include adequate spectrum for the purposes; adequate, reliable and available antenna structures; and flexible operating regulations. The Amateur Service needs the Commission's help in each of these areas, and looks forward to continued dialog in those regulatory areas.

Therefore, the foregoing considered, ARRL, the National Association for Amateur Radio, respectfully requests that the Commission issue a Notice of Proposed Rule Making at any early date, proposing the rule changes set forth herein, and in the appendix attached hereto.

Respectfully submitted,

ARRL, the National Association for Amateur Radio

225 Main Street
Newington, CT 06111

By: _____
Christopher D. Imlay
General Counsel

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Washington, D.C. 20016
(202) 686-9600

March 22, 2002

APPENDIX

PROPOSED RULES

Title 47 of the Code of Federal Regulations, Part 97, is amended as follows:

PART 97 – AMATEUR RADIO SERVICE

1. Section 97.3(a)(11)(iii) is amended to read as follows:

(iii) *Special event call sign system.* The call sign is selected by the station licensee from a list of call signs shown on a common data base coordinated, maintained and disseminated by the amateur station special event call sign data base coordinators. The call sign must have the single letter prefix K, N or W, followed by a single numeral through 9, followed by a single letter A through W or Y or Z (for example K1A) or else a two-letter prefix designating a United States Territory or Possession which has no mailing address, followed by a single numeral through 9 appropriate to that prefix, followed by a single letter A through W or Y or Z (for example KH5K). The special event call sign is substituted for the call sign shown on the station license grant while the station is transmitting. The FCC will issue public announcements detailing the procedures of the special event call sign system.

2. Section 97.119, Station identification, is amended by revising paragraph (b)(1) to read as follows:

§ 97.119 Station identification

* * * * *

(b) * * *

(1) By a CW or MCW emission. When keyed by an automatic device used only for identification, the speed must not exceed 20 words per minute;

3. Section 97.301, Authorized frequency bands, is amended by revising paragraph (b) to read as follows:

§ 97.301 Authorized frequency bands

* * * * *

(b) For a station having a control operator who has been granted an Amateur Extra Class operator license or who holds a CEPT radio-amateur license Class 1 license or Class 1 IARP:

Wavelength band	ITU Region 1	ITU Region 2	ITU Region 3	Sharing requirements see § 98.303 (Paragraph)
*	*	*	*	*
HF	MHz	MHz	MHz	
80 m	3.500-3.725	3.500-3.725	3.500-3.725	(a)
75 m	3.725-3.800	3.725-4.000	3.725-3.900	(a)
*	*	*	*	*
15 m	21.0-21.2	21.0-21.2	21.0-21.2	

-do-	21.20-21.45	21.20-21.45	21.20-21.45	

* * * * *

4. Section 97.301, Authorized frequency bands, is amended by revising paragraph (c) to read as follows:

§ 97.301 Authorized frequency bands

* * * * *

(c) For a station having a control operator who has been granted an operator license of Advanced Class:

Wavelength band	ITU Region 1	ITU Region 2	ITU Region 3	Sharing requirements see § 98.303 (Paragraph)
*	*	*	*	*
HF	MHz	MHz	MHz	
80 m	3.525-3.750	3.525-3.750	3.525-3.750	(a)
75 m	3.750-3.800	3.750-4.000	3.750-3.900	(a)
*	*	*	*	*
15 m	21.025-21.200	21.025-21.200	21.025-21.200	
-do-	21.225-21.450	21.225-21.450	21.225-21.450	

* * * * *

5. Section 97.301, Authorized frequency bands, is amended by revising paragraph (d) to read as follows:

§ 97.301 Authorized frequency bands

* * * * *

(d) For a station having a control operator who has been granted an operator license of General Class:

Wavelength band	ITU Region 1	ITU Region 2	ITU Region 3	Sharing requirements see § 98.303 (Paragraph)
*	*	*	*	*
HF	MHz	MHz	MHz	
80 m	3.525-3.725	3.525-3.725	3.525-3.725	(a)
75 m	-	3.8-4.0	3.8-3.9	(a)
40m	7.025-7.100	7.025-7.125	7.025-7.100	(a)

-do-	--	7.175-7.300	--	(a)

* * * * *

15 m	21.025-21.200	21.025-21.200	21.025-21.200	
-do-	21.275-21.450	21.275-21.450	21.275-21.450	

* * * * *

6. Section 97.301, Authorized frequency bands, is amended by revising paragraph (e) to read as follows:

§ 97.301 Authorized frequency bands

* * * * *

(e) For a station having a control operator who has been granted an operator license of Novice Class or Technician Class and who has received credit for proficiency in telegraphy in accordance with the international requirements.

:Wavelength band	ITU Region 1	ITU Region 2	ITU Region 3	Sharing requirements see § 98.303 (Paragraph)
HF	MHz	MHz	MHz	
80 m	3.525-3.725	3.525-3.725	3.525-3.725	(a)
40m	7.025-7.075	7.025-7.125	7.025-7.075	(a)

* * * * *

15 m	21.025-21.200	21.025-21.200	21.025-21.200	
10 m	28.0-28.5	28.0-28.5	28.0-28.5	

* * * * *

7. Section 97.303(g)(1) shall be amended to read as follows:

(1) Except in the segments 902.0-902.4 MHz; 902.6-904.3 MHz; 904.7-925.3 MHz; 925.7-927.3 MHz, and 927.7-928 MHz, no amateur station shall transmit from within the States of Colorado and Wyoming,...

8. Section 97.305, Authorized emission types, is amended by revising paragraph (c) to read as follows:

§ 97.305 Authorized emission types

* * * * *

(c) * * *

Wavelength band	Frequencies	Emission Types Authorized	Standards See § 97.307(f)

*	*	*	*
40 m	7.000-7.125 MHz	RTTY, data	(3), (9)
-do-	7.075-7.100 MHz	Phone, image	(1), (2), (9), (11)
-do-	7.125-7.300 MHz	Phone, image	(1), (2)
*	*	*	*
15 m	21.0-21.2 MHz	RTTY, data	(3), (9)
-do-	21.20-21.45 MHz	Phone, image	(1), (2)
*	*	*	*
1.25m	219-220 MHz	Data	(13)
-do-	222-225 MHz	MCW, phone, image, RTTY, data, SS, test	(2), (6), (8), (12)

9. Section 97.313, Transmitter power standards, is amended by revising paragraph (c) to read as follows:

§ 97.313 Transmitter power standards

* * * * *

(c) No station may transmit with a transmitter power exceeding 200 W PEP on:

(1) The 10.10-10.15 MHz segment; or

(2) When the control operator is a Novice Class operator or a Technician Class operator who has received credit for proficiency in telegraphy in accordance with the international requirements; or

* * * * *

EXHIBIT A

The ARRL Novice Spectrum Study Survey

In July this survey was placed on the ARRL Members Only Web site at **www.arrl.org/members-only/NoviceSurvey.html**. If you do not have access to the Members Only Web site you may complete and send this survey (or a photocopy) to:

The Novice Spectrum Study Committee
ARRL
225 Main St
Newington, CT 06111

The ARRL Board of Directors needs your input and thoughts on what to do with the current HF Novice frequencies. In the 1950s the FCC created the Novice license as a method for people to enter the Amateur Radio Service. The 5 word per minute code exam and a simple theory test brought the new licensee a taste of Amateur Radio worldwide communication in selected portions of the 80, 40 and 15 meter CW bands.

For 30 years this license was the primary way people entered the Amateur Radio Service.

In 1990 the code-free Technician license was introduced. Interest in the Novice license waned dramatically as the code-free Tech became the entry-level license of choice. In 2000 the FCC announced that due to a lack of interest, the Novice license would no longer be issued. Having completed its task with distinction, the Novice license has been retired.

What impact does this have on current Novice licensees? There are currently about 40,000 Novices in the FCC's database. That number has declined by about 6,000 a year through non-renewal and upgrading. Recent studies of the Novice portions of most HF bands show that those frequencies, once a hotbed of new amateurs, are not as heavily used as other parts of the bands.

At the January 2001 Annual Meeting, the Board charged ARRL President Jim Haynie, W5JBP, with forming a Committee to investigate "refarming" of these Novice frequencies. The Committee, led by International Affairs Vice President Rod Stafford, W6ROD, recommended in an early session that League members be surveyed on the Members Only web site as to what they think should be done with the frequencies.

For each HF band that includes a Novice subband, the committee offers an option of "no change" as well as other options. Please make any written comments on another sheet of paper. Or, if you prefer, you may send an email to the Committee at **NoviceSurvey@arrl.org**.

Please take a moment of your time to participate in the survey and tell your representatives what you think should be done with the Novice frequencies. Place a mark on the line corresponding to your selection. Your input is solicited!

73, and thanks for your time.

The Novice Spectrum Study Committee
International Affairs Vice President
Rod Stafford, W6ROD, Chairman
Vice President John Kanode, N4MM,
Vice Director Bruce Frahm, K0BJ
Vice Director Twila Greenheck, N0JPH
Vice Director Steve Mendelsohn, W2ML
Vice Director Mike Raisbeck, K1TWF

You may answer one survey only. Please do not submit this survey if you have already answered the survey on the ARRL Members Only Web site.

1 Your name and call sign (answer optional)

_____

2 Approximately what percentage of time do you spend on the air using:

CW?
__ 0
__ 1 to 25 percent
__ 26 - 50 percent
__ 51 - 75 percent
__ 76 - 99 percent
__ 100 percent
__ I am not active on the air

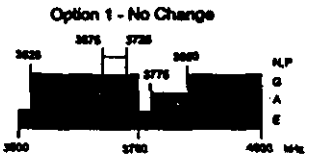
Other digital modes?
__ 0
__ 1 to 25 percent
__ 26 - 50 percent
__ 51 - 75 percent
__ 76 - 99 percent
__ 100 percent
__ I am not active on the air

SSB/FM/AM?
__ 0
__ 1 to 25 percent
__ 26 - 50 percent
__ 51 - 75 percent
__ 76 - 99 percent
__ 100 percent
__ I am not active on the air

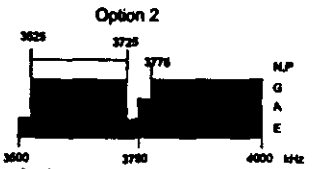
3 What is your license class?
__ Novice
__ Technician Plus
__ Technician
__ General
__ Advanced
__ Extra
__ I am not licensed

4 Which of these options do you prefer for 80 meters?

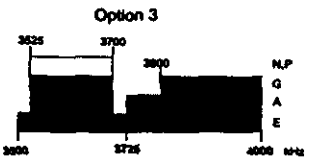
__ No change



__ 3.500 – 3.525 Extra CW
3.525 – 3.725 All license classes (except Technician) CW
3.725 – 3.750 Extra phone
3.750 – 3.775 Extra/Advanced phone
3.775 – 4.000 Extra/Advanced and General phone



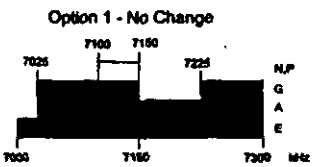
__ 3.500 – 3.525 Extra CW
3.525 – 3.700 All license classes (except Technician) CW
3.700 – 3.725 Extra Class phone
3.725 – 3.800 Extra/Advanced phone
3.800 – 4.000 Extra/Advanced/General phone



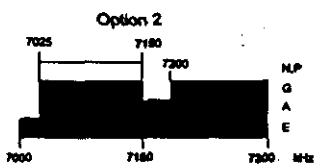
__ Other

5 Which of these options do you prefer for 40 meters?

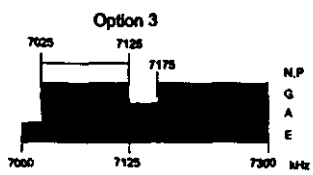
__ No change



__ 7.000 – 7.025 Extra CW
7.025 – 7.150 All license classes (except Technician) CW
7.150 – 7.200 Extra/ Advanced phone
7.200 – 7.300 Extra/Advanced/General phone



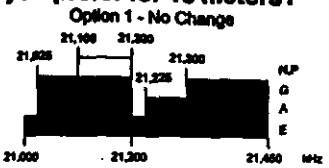
__ 7.000 – 7.025 Extra CW
7.025 – 7.125 All license classes (except Technician) CW
7.125 – 7.175 Extra/ Advanced phone
7.175 – 7.300 Extra/Advanced phone



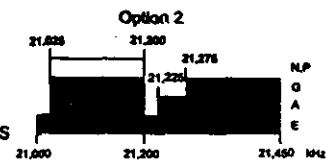
__ Other

6 Which of these options do you prefer for 15 meters?

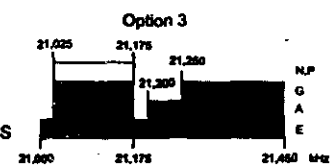
__ No change



__ 21.000 – 21.025 Extra CW
21.025 – 21.200 All license classes (except Technician) CW
21.200 – 21.225 Extra Class phone
21.225 – 21.275 Extra/Advanced phone
21.275 – 21.450 Extra/Advanced/General phone



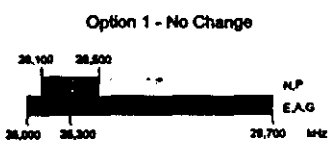
__ 21.000 – 21.025 Extra CW
21.025 – 21.175 All license classes (except Technician) CW
21.175 – 21.200 Extra Class phone
21.200 – 21.250 Extra/Advanced phone
21.250 – 21.450 Extra/Advanced/General phone



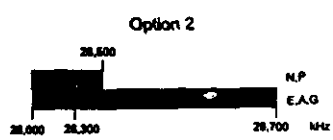
__ Other

7 Which of these options do you prefer for 10 meters?

__ No change



__ 28.000 – 28.300 All license classes (except Technician) CW
28.300 – 28.500 All license classes (except Technician) phone
28.500 – 29.700 Extra/Advanced/General phone



__ Other

8 Are you a resident of the United States? YES or NO (answer required)

__ Yes __ No

Committee note to survey respondent:

There will continue to be Novice and Technician Plus licensees for the foreseeable future. Therefore, the Committee believes that in order to satisfy its goal of not decreasing privileges for any licensee, any future option will include CW spectrum for Novice/Technician Plus operators (in addition to the phone privileges already in place on 10 meters). On the 80, 40 and 15 meter bands, Novice/Technician Plus CW band restrictions should be changed to match those of General Class CW/ RTTY/Data band segments with the caveat that Novice/Technician Plus operators only use CW with a maximum power of 200 watts in those bands. On 10 meters, CW/RTTY/Data modes are allowed for Novice/Technician Plus licensees.

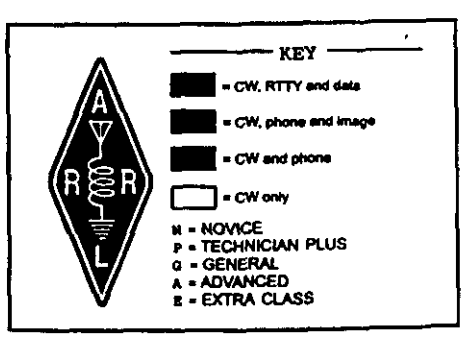


EXHIBIT B

APPENDIX B

ARRL NOVICE SPECTRUM STUDY COMMITTEE

SURVEY RESULTS (7 November 2001)

4744 respondents

License Class of Respondent as Reported:

Novice	30 (0.6 %)
Tech	232 (4.9 %)
Tech Plus	124 (2.6%)
General	895 (18.9 %)
Advanced	384 (8.1 %)
Extra	2889 (60.9 %)
Foreign	51 (1.1 %)
[None]	139 (2.9 %)

Respondents grouped by CW usage shows:

34 percent (1611) use CW from 1-25 % of their operating time
26.3 percent (1249) never use CW
12 percent (568) use CW from 26-50 % of their operating time
14 percent (664) use CW from 76 –99 % of the time
9.8 percent (466) use CW from 51-75 % of the time
2.9 percent (137) use CW 100 % of the time
1 percent (49) are not active

Respondents by DIGITAL usage shows:

45.2 percent (2142) use digital modes from 1-25 % of their operating time
39.8 percent (1889) never use digital modes
8.8 percent (417) use digital modes 26-50 % of the time
3.1 percent (145) use digital modes 51-75 % of the time
1.5 percent (73) use digital modes 76-99 % of the time
1.3 percent (60) are not active
0.4 percent (18) use digital modes 100 % of the time

Respondents by VOICE usage shows:

25.5 percent (1209) use voice 1-25 % of the time
23.3 percent (1105) use voice 76-99 % of the time
17 percent (805) use voice 26-50 % of the time
16.2 percent (767) use voice 51-75 % of the time
12.4 percent (586) use voice 100 % of the time
4.3 percent (206) never use voice
1.4 percent (66) are not active

Among the specific band options

80 Meters

Option 3: 39.7 percent
Option 2: 31.4 percent
Option 1: 23 percent
Option 4: 6 percent

Option 3 is:

3.500 – 3.525 Extra CW
3.525 – 3.700 All license classes (except Technician) CW
3.700 – 3.725 Extra Class phone
3.725 – 3.800 Extra/Advanced phone
3.800 – 4.000 Extra/Advanced/General phone

40 Meters

Option 3: 48.5 percent
Option 2: 24 percent
Option 1: 20.9 percent
Option 4: 6.6 percent

Option 3 is:

7.000 – 7.025 Extra CW
7.025 – 7.125 All license classes (except Technician) CW and
7.125 – 7.175 Extra/Advanced phone
7.175 – 7.300 Extra/Advanced phone

15 Meters

Option 3: 48.7 percent
Option 2: 23.1 percent
Option 1: 22.5 percent
Option 4: 5.7 percent

Option 3 is:

21.000 – 21.025 Extra CW
21.025 – 21.175 All license classes (except Technician) CW and
21.175 – 21.200 Extra phone
21.200 – 21.250 Extra/Advanced phone
21.250 – 21.450 Extra/Advanced/General phone

10 Meters

Option 2: 54.5 percent
Option 1: 39.2 percent
Option 3: 6.3 percent

Option 2 is:

28.000 – 28.300 All license classes (except Technician) CW
28.300 – 28.500 All license classes (except Technician) phone
28.500 – 29.700 Extra/Advanced/General phone

Novice respondents prefer:

80M: Option 1 (40.0 %)
Option 2 (36.7 %)
Option 3 (20.0 %)
Option 4 (3.3 %)

40M: Option 2 (56.7 %)
Option 1 (26.7%)
Option 3 (13.3 %)
Option 4 (3.3 %)

15M: Option 2 (60.0 %)
Option 1 (33.3 %)
Option 3 (3.3 %)
Option 4 (3.3 %)

10M: Option 2 (50.0 %)
Option 1 (46.7 %)
Option 3 (3.3 %)

Technician respondents prefer:

80M: Option 2 (39.2 %)
Option 1 (23.3 %)
Option 4 (20.7 %)
Option 3 (16.8 %)

40M: Option 3 (31.9 %)
Option 2 (23.7 %)
Option 1 (23.7 %)
Option 4 (20.7 %)

15M: Option 3 (28.0 %)
Option 2 (27.2 %)
Option 1 (26.3 %)
Option 4 (18.5 %)

10M: Option 2 (47.4 %)
Option 1 (27.6%)
Option 3 (25.0 %)

Technician Plus respondents prefer:

80M: Option 2 (48.4 %)
Option 1 (22.6 %)
Option 3 (16.1 %)
Option 4 (12.9 %)

40M: Option 2 (35.5 %)
Option 3 (29.0 %)
Option 1 (21.8 %)
Option 4 (13.7 %)

15M: Option 2 (38.7 %)
Option 3 (25.0 %)
Option 1 (22.6 %)
Option 4 (13.7 %)

10M: Option 2 (58.9 %)
Option 1 (29.8 %)
Option 3 (11.3 %)

General class respondents prefer:

80M: Option 2 (62.9 %)
Option 1 (17.9 %)
Option 3 (15.9%)
Option 4 (3.4 %)

40M: Option 3 (61.7 %)
Option 2 (22.1 %)
Option 1 (13.5 %)
Option 4 (2.7 %)

15M: Option 3 (62.1 %)
Option 2 (19.1 %)
Option 1 (15.4 %)
Option 4 (3.4 %)

10M: Option 2 (58.8%)
Option 1 (37.8 %)
Option 3 (3.5 %)

Advanced class respondents prefer:

80M: Option 3 (47.4%)
Option 1 (27.9 %)
Option 2 (20.1 %)
Option 4 (4.7 %)

40M: Option 3 (45.6 %)
Option 1 (26.0 %)
Option 2 (22.9%)
Option 4 (5.5 %)

15M: Option 3 (50.5 %)
Option 1 (24.7 %)
Option 2 (19.5 %)
Option 4 (5.2 %)

10M: Option 2 (58.3 %)
Option 1 (35.2 %)
Option 3 (6.5 %)

Extra class respondents prefer:

80M: Option 3 (48.9 %)
Option 1 (24.1 %)
Option 2 (21.6 %)
Option 4 (5.4 %)

40M: Option 3 (47.3 %)
Option 2 (23.8 %)
Option 1 (22.4 %)
Option 4 (6.4 %)

15M: Option 3 (47.6 %)
Option 1 (24.3 %)
Option 2 (23.2 %)
Option 4 (4.9 %)

10M: Option 2 (53.1 %)
Option 1 (41.4 %)
Option 3 (5.6 %)

Foreign respondents prefer:

80M: Option 3 (41.2 %)
Option 2 (37.3 %)
Option 1 (17.6 %)
Option 4 (3.9 %)

40M: Option 3 (49.0 %)
Option 2 (25.5 %)
Option 1 (21.6 %)
Option 4 (3.9 %)

15M: Option 3 (45.1 %)
Option 2 (25.5 %)
Option 1 (23.5 %)
Option 4 (5.9 %)

10M: Option 2 (56.9 %)
Option 1 (37.3 %)
Option 3 (5.9 %)

	Those using voice modes 100 % of the time prefer:	Those using CW 100 % of the time prefer:
80M:	Option 2 (38.7 %)	Option 1 (43.1 %)
	Option 3 (36.0 %)	Option 2 (29.2 %)
	Option 1 (18.6 %)	Option 3 (23.4 %)
	Option 4 (6.7 %)	Option 4 (4.4 %)
40M:	Option 3 (59.4 %)	Option 2 (40.1 %)
	Option 1 (18.4 %)	Option 1 (35.0 %)
	Option 2 (14.8 %)	Option 3 (19.7 %)
	Option 4 (7.3 %)	Option 4 (5.1 %)
15M:	Option 3 (60.4 %)	Option 2 (38.7 %)
	Option 1 (18.3 %)	Option 1 (37.2 %)
	Option 2 (14.7 %)	Option 3 (19.7 %)
	Option 4 (6.7 %)	Option 4 (4.4 %)
10M:	Option 2 (58.4 %)	Option 1 (53.3 %)
	Option 1 (34.1 %)	Option 2 (41.6 %)
	Option 3 (7.5 %)	Option 3 (5.1 %)

	Those using voice modes 76-99 % of the time:	Those using CW 76-99 % of the time
80M:	Option 3 (47.4 %)	Option 1 (33.6 %)
	Option 2 (30.6 %)	Option 2 (31.6 %)
	Option 1 (16.7 %)	Option 3 (31.0 %)
	Option 4 (6.7 %)	Option 4 (3.8 %)
40M:	Option 3 (62.1 %)	Option 2 (38.7 %)
	Option 2 (16.2 %)	Option 3 (29.4 %)
	Option 1 (16.0 %)	Option 1 (28.2 %)
	Option 4 (5.7 %)	Option 4 (3.8 %)
15M:	Option 3 (62.4 %)	Option 2 (35.1 %)
	Option 1 (17.0 %)	Option 3 (31.2 %)
	Option 2 (15.2 %)	Option 1 (30.9 %)
	Option 4 (5.3 %)	Option 4 (2.9 %)
10M:	Option 2 (56.0 %)	Option 2 (51.4 %)
	Option 1 (38.4 %)	Option 1 (45.3 %)
	Option 3 (5.6 %)	Option 3 (3.3 %)

	Those using voice modes 51-75 % of the time:	Those using CW 51-75 % of the time
80M:	Option 3 (41.7 %)	Option 3 (40.3 %)
	Option 2 (28.7 %)	Option 2 (27.3 %)
	Option 1 (21.4 %)	Option 1 (27.0 %)
	Option 4 (8.2 %)	Option 4 (5.4 %)
40M:	Option 3 (49.5 %)	Option 3 (39.5 %)
	Option 2 (20.5 %)	Option 2 (32.2 %)
	Option 1 (20.3 %)	Option 1 (22.5 %)
	Option 4 (9.6 %)	Option 4 (5.8 %)

15M:	Option 3 (49.2 %)	Option 3 (38.0 %)
	Option 1 (22.9 %)	Option 2 (32.4 %)
	Option 2 (20.2 %)	Option 1 (25.8 %)
	Option 4 (7.7 %)	Option 4 (3.9 %)
10M:	Option 2 (50.6 %)	Option 2 (56.2 %)
	Option 1 (40.7 %)	Option 1 (39.1 %)
	Option 3 (8.7 %)	Option 3 (4.7 %)

Those using voice modes 26-50 % of the time: **Those using CW 26-50 % of the time**

80M:	Option 3 (43.2 %)	Option 3 (44.9 %)
	Option 2 (30.6 %)	Option 1 (24.8 %)
	Option 1 (21.7 %)	Option 2 (24.3 %)
	Option 4 (5.8 %)	Option 4 (6.0 %)
40M:	Option 3 (49.2 %)	Option 3 (44.2 %)
	Option 2 (23.6 %)	Option 2 (25.4 %)
	Option 1 (20.9 %)	Option 1 (23.1 %)
	Option 4 (6.3 %)	Option 4 (7.4 %)
15M:	Option 3 (47.5 %)	Option 3 (42.4 %)
	Option 2 (24.3 %)	Option 2 (25.5 %)
	Option 1 (23.1 %)	Option 2 (25.5 %)
	Option 4 (5.1 %)	Option 4 (6.5 %)
10M:	Option 2 (56.1 %)	Option 2 (50.7 %)
	Option 1 (37.8 %)	Option 1 (42.6 %)
	Option 3 (6.1 %)	Option 3 (6.7 %)

Those using voice modes 1-25 % of the time: **Those using CW 1-25 % of the time**

80M:	Option 3 (33.7 %)	Option 3 (44.4 %)
	Option 2 (31.0 %)	Option 2 (30.4 %)
	Option 1 (30.2 %)	Option 1 (20.4 %)
	Option 4 (5.0 %)	Option 4 (4.8 %)
40M:	Option 2 (34.8 %)	Option 3 (54.6 %)
	Option 3 (34.2 %)	Option 2 (20.5 %)
	Option 1 (25.4 %)	Option 1 (19.2 %)
	Option 4 (5.5 %)	Option 4 (5.6 %)
15M:	Option 3 (34.7 %)	Option 3 (55.7 %)
	Option 2 (32.6 %)	Option 1 (20.7 %)
	Option 1 (28.0 %)	Option 2 (19.1 %)
	Option 4 (4.7 %)	Option 4 (4.5 %)
10M:	Option 2 (53.8 %)	Option 2 (55.8 %)
	Option 1 (41.2 %)	Option 1 (39.2 %)
	Option 3 (5.0 %)	Option 3 (5.0 %)

	Those using voice modes 0 % of the time:	Those using CW 0 % of the time
80M:	Option 1 (38.8 %)	Option 3 (37.6 %)
	Option 2 (32.0 %)	Option 2 (37.1 %)
	Option 3 (24.3 %)	Option 1 (16.4 %)
	Option 4 (4.9 %)	Option 4 (9.0 %)
40M:	Option 2 (41.7 %)	Option 3 (59.2 %)
	Option 1 (31.1 %)	Option 1 (16.2 %)
	Option 3 (22.3 %)	Option 2 (15.1 %)
	Option 4 (4.9 %)	Option 4 (9.4 %)
15M:	Option 2 (39.8 %)	Option 3 (58.8 %)
	Option 1 (30.6 %)	Option 1 (16.7 %)
	Option 3 (25.2 %)	Option 2 (15.6 %)
	Option 4 (4.4 %)	Option 4 (9.0 %)
10M:	Option 1 (48.5 %)	Option 2 (56.5 %)
	Option 2 (46.1 %)	Option 1 (33.1 %)
	Option 3 (5.3 %)	Option 3 (10.4 %)

	Those using digital modes 100 % of the time:	Those using digital 76-99 % of the time
80M:	Option 3 (50.0 %)	Option 2 (35.6 %)
	Option 1 (22.2 %)	Option 3 (28.8 %)
	Option 2 (16.7 %)	Option 1 (21.9 %)
	Option 4 (11.1 %)	Option 4 (13.7 %)
40M:	Option 3 (50.0 %)	Option 3 (39.7 %)
	Option 2 (27.8 %)	Option 1 (23.3 %)
	Option 1 (11.1 %)	Option 2 (20.5 %)
	Option 4 (11.1 %)	Option 4 (16.4 %)
15M:	Option 3 (50.0 %)	Option 3 (42.5 %)
	Option 2 (22.2 %)	Option 1 (20.5 %)
	Option 1 (16.7 %)	Option 2 (20.5 %)
	Option 4 (11.1 %)	Option 4 (16.4 %)
10M:	Option 2 (55.6 %)	Option 2 (50.7 %)
	Option 1 (33.3 %)	Option 1 (35.6 %)
	Option 3 (11.1 %)	Option 3 (13.7 %)

	Those using digital modes 51-75 % of the time:	Those using digital 26-50 % of the time
80M:	Option 2 (40.0 %)	Option 3 (40.3 %)
	Option 3 (30.3 %)	Option 2 (31.7 %)
	Option 1 (22.8 %)	Option 1 (19.7 %)
	Option 4 (6.9 %)	Option 4 (8.4 %)
40M:	Option 3 (46.9 %)	Option 3 (48.7 %)
	Option 2 (24.1 %)	Option 2 (25.7 %)
	Option 1 (20.7 %)	Option 1 (18.2 %)
	Option 4 (8.3 %)	Option 4 (7.4 %)

15M:	Option 3 (48.3 %)	Option 3 (44.4 %)
	Option 1 (22.8 %)	Option 2 (27.1 %)
	Option 2 (21.4 %)	Option 1 (20.6 %)
	Option 4 (7.6 %)	Option 4 (7.9 %)
10M:	Option 2 (55.2 %)	Option 2 (55.6 %)
	Option 1 (37.9 %)	Option 1 (35.7 %)
	Option 3 (6.9 %)	Option 3 (8.6 %)

	Those using digital modes 1-25 % of the time:	**Those using digital 0 % of the time**
80M:	Option 3 (42.4 %)	Option 3 (37.4 %)
	Option 2 (30.2 %)	Option 2 (32.1 %)
	Option 1 (21.5 %)	Option 1 (25.4 %)
	Option 4 (5.9 %)	Option 4 (5.1 %)
40M:	Option 3 (49.9 %)	Option 3 (47.5 %)
	Option 2 (23.6 %)	Option 2 (23.9 %)
	Option 1 (19.6 %)	Option 1 (23.0 %)
	Option 4 (6.9 %)	Option 4 (5.6 %)
15M:	Option 3 (50.0 %)	Option 3 (48.5 %)
	Option 2 (23.1 %)	Option 1 (24.7 %)
	Option 1 (21.1 %)	Option 2 (22.3 %)
	Option 4 (5.7 %)	Option 4 (4.4 %)
10M:	Option 2 (55.6 %)	Option 2 (53.0 %)
	Option 1 (38.6 %)	Option 1 (40.8 %)
	Option 3 (5.8 %)	Option 3 (6.2 %)